## REMARKS

Summary of Office Action

Claims 1, 3-8, 10-12, 14-16, 20-22, 24, 26-28, 30 and 32-44 are pending in this application.

Claims 22 and 30 have been objected to for various informalities.

Claims 20-22 and 40 have been rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Claims 20-22 and 40 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

Claims 1, 3-7, 26, 33, 38 and 41 have been rejected under 35 U.S.C. § 103(a) as being obvious from Gorecki U.S. Patent Application Publication No. 2004/0071205 ("Gorecki") in view of WinSLAC Software Useru's Guide (1999) ("WinSLAC"). Claims 21, 22, 30 and 36 have been rejected under 35 U.S.C. § 103(a) as being obvious from Jaynes et al. U.S. Patent Application Publication No. 2005/0047779 ("Jaynes") in view of WinSLAC. Claims 8, 10, 11, 24, 27, 32, 34, 37, 39 and 42 have been rejected under 35 U.S.C. § 103(a) as being obvious from Gorecki and Lu U.S. Patent No. 6,275,836 ("Lu") in view of WinSLAC.

Claims 12, 14-16, 28, 35 and 43 have been allowed. Claims 20, 40 and 44 have been objected to as being dependent upon a rejected base claim but allowable subject matter has been indicated.

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Summary of Telephonic Interview

Applicants would like to thank the Examiner for the courtesies extended during the April 22, 2009 telephonic interview with the undersigned. During the interview, the Examiner's rejections with respect to the independent claims were discussed. Applicants explained the differences between the claimed invention and the prior art (discussed below). The Examiner indicated that the further consideration would be required.

Summary of Applicants' Reply

Applicants note with appreciation the allowance of claims 12, 14-16, 28, 35 and 43 and the indication of allowable subject matter in claims 20, 40 and 44.

Applicants have amended claims 20-22, 30 and 40 in order to particularly define the claimed invention. No new matter has been added and the amendments are fully supported by the originally-filed application.

Applicants respectfully traverse the Examiner's rejections.

Applicants' Reply to the Claim Objections

Claims 22 and 30 have been objected to for various informalities. Claims 22 and 30 have been amended in order to correct for various informalities. Applicants respectfully submit that claims 22 and 30 are not objectionable and request that the objection be withdrawn.

Applicants' Reply to the Section 112 Rejections

Claims 20-22 and 40 have been rejected under
35 U.S.C. § 112, first paragraph, as failing to comply with the
written description requirement.  In particular, with respect
to claim 22, the Examiner indicated that the limitation of "a
training pattern circuitry that computes a second training
pattern" is not supported by the specification because the
specification states that a predetermined training pattern is
stored in element 176.  Applicants have amended claim 22 in
order to more particularly define the claimed invention.
Applicants respectfully submit that claim 22, as amended, is
fully supported by the specification.

Accordingly, applicants respectfully submit that
claim 22 and claims 20, 21 and 40 that depend therefrom do not
fail to comply with the written description requirement and
request that the Section 112, first paragraph, rejection of
claims 20-22 and 40 be withdrawn.

Claims 20-22 and 40 have been rejected under
35 U.S.C. § 112, second paragraph, as being indefinite.  With
respect to claim 21, the Examiner point out an inconsistency
between claim 22 which recites "an error signal" and claim 21
which recites "the second error signal."  With respect to
claim 40, the Examiner indicated that it is not clear if the
first processing circuitry computes a plurality of error
signals because claim 22 which recites the processing circuitry
computing "an error signal" while claim 40 recites the
processing circuitry computing "a first error signal."
Claims 21, 22 and 40 have been amended to correct for various

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inconsistencies and to more particularly define the claimed invention. Applicants respectfully submit that claim 22 and claims 20, 21 and 40 that depend therefrom, as amended, are not indefinite.

Accordingly, applicants respectfully request that Section 112, second paragraph, rejection of claims 20-22 and 40 be withdrawn.


Applicants' Reply to the Prior Art Rejections

Claims 1, 3-7, 26, 33, 38 and 41

Claims 1, 3-7, 26, 33, 38 and 41 have been rejected under 35 U.S.C. § 103(a) as being obvious from Gorecki in view of WinSLAC. This rejection is respectfully traversed.

Applicants' invention, as defined by amended claims 1 and 26, is directed to receiver circuitry and methods for adaptively equalizing a data signal. The receiver circuitry and methods include, *inter alia*, equalization implementation circuitry that includes a selectable number of taps. Programmable circuitry is programmed with a first value corresponding to a first number of taps. Processing circuitry computes a second value corresponding to a second number of taps. Selection circuitry selects one of the first and second values. The selectable number of taps of the equalization implementation circuitry corresponds to the selected value.

Gorecki generally discusses a transceiver that has (1) a transmitter that includes equalization circuitry to provide signal compensation and (2) a receiver that receives a compensated signal from another transceiver. In one

implementation of the transmitter, an adaptive algorithm may vary the positioning of the taps, the coefficients of the taps and/or the pulse durations of the taps. In other implementations of the transmitter, a user may program the positioning of the taps, the coefficients of the taps and/or the pulse durations of the taps. (Gorecki, Abstract, page 6, ¶¶ 57, 68 and 69 and pages 9-10, ¶¶ 104, 112 and 114.)

WinSLAC is a software tool that enables the user to design and generate coefficients for the filters of various devices and provdies the user with predicted performance of system parameters. A SLAC Menu provides choices for coefficient generation options for each filter block. The *calculate* option allows the filter to automatically calculate coefficients while the *set* option allows the coefficients to be manually entered by the user. The software tool will model the behavior of the filter depending on which option is selected by the user. (WinSLAC, pages 1-1, 4-17 and 4-18.)

Applicants respectfully submit that Gorecki and WinSLAC, alone or in combination, do not show or suggest equalization implementation circuitry having a selectable number of taps that corresponds to a selected one of first and second values, as defined by applicants' claims 1 and 26. Instead, as discussed during the interview, in Gorecki the equalization circuitry has one leading tap and one trailing tap which have programmable coefficients, positioning and/or pulse durations and does not show or suggest that the number of taps used in the equalizer correspond to a selected value (Gorecki, ¶ 16). In particular, the equalizer in Gorecki has a

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predefined number of taps where different values can be
specified for those predefined taps whereas in applicants'
claimed equalizer, the number of taps (i.e., how many taps are
to be implemented) is selectable to correspond to a selected
one of two values.  Additionally, WinSLAC allows a user to
specify how tap coefficients are generated by different filters
in an predefined filter component and therefore also does not
show or suggest an equalizer with a selectable number of taps.

Additionally, the Examiner acknowledges that Gorecki
fails to show or suggest selection circuitry that selects one
of the first and second values based on a control signal and
relies on WinSLAC to make up for this deficiency (Office
Action, page 5).  However, applicants respectfully submit that
WinSLAC does not show or suggest selection circuitry that
selects one of two values based on a control signal.

First, applicants respectfully submit that because
WinSLAC discusses a software tool that can be used to configure
a particular device to operate in a particular way and models
that implementation, WinSLAC fails to show or suggest an
already implemented receiver circuitry with selection
circuitry.  More specifically, the mere simulation of receiver
circuitry given the necessary parameters, as discussed in
WinSLAC, is not the same as a circuit that is implemented to
perform a particular function (e.g., select between two
values), as defined by applicants' claims.

Second, even if WinSLAC software could be analogized
with a receiver circuit, applicants respectfully submit that
selecting a filter parameter such as calculate or set is not

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the same as selecting between one value that is programmed and another that is computed, as required by applicants' claims. In particular, the Examiner alleges that the first value that is selected for the filter is a calculate parameter and the second value that is selected for the filter is a set parameter. However, selection of parameters indicative of whether the filter will calculate or use predetermined coefficient values, as discussed in WinSLAC, is not the same as selection between one value that is computed and another that is programmed. More specifically, the calculate and set parameters are mere vales indicating how the filter is to behave and are not actually computed or programmed, as required by applicants' claims.

Third, the only values that are computed or set are the coefficient values generated by the filter after having the calculate or set parameter provided. However, even assuming that the coefficient values that are computed or set are applicants' claimed first and second values, WinSLAC would still fail to show or suggest a selection circuit that selects one of two values based on a control signal, as required by applicants' claims 1 and 26. In particular, in WinSLAC the user interface allows a user to choose whether a filter will be modeled based on calculated coefficients (i.e., the alleged first value) or a predetermined coefficient value (i.e., the alleged second value) and the software then models the selected filter behavior. Therefore, when the user selects which way the filter will generate coefficients (i.e., before modeling the filter), neither of applicants' claimed first or second

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values (e.g., first number of taps and second number of taps)
exist.  Their existence is arguably only present when the
filter is modeled by the software.  Moreover, because only the
selected method (e.g., either calculate or set) is used in the
modeling to generate coefficients (i.e., the alleged two
values), WinSLAC fails to show or suggest the existence of two
values from which to select and additionally selection
circuitry that selects between the two values based on a
control signal.  Further, the only selection that occurs in
WinSLAC is when the user chooses which way a filter will
generate coefficients which applicants respectfully submit one
skilled in the art would not analogize with selection
circuitry.

Finally, even if the user were analogized with
selection circuitry that selects based on a control signal,
WinSLAC would still fail to show or suggest selection circuitry
that selects one of two values at the time the programmable
circuitry is being programmed by configuration data, as
required by applicants' claims 1 and 26.  In particular,
because in WinSLAC the user selects how a particular filter
will generate coefficients (i.e., either by calculating or
setting the coefficients) before the software models the
receiver and before the receiver is implemented, WinSLAC
necessarily does not show or suggest such a selection being
performed at the time the programmable circuitry is being
programmed by configuration data.  At best, WinSLAC discusses
the filter coefficient selection when creating the

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configuration data but not at the time the programmable circuitry is being programmed by that configuration data.

Therefore, Gorecki and WinSLAC, whether taken alone or in combination, do not show or suggest all the features of applicants' claims 1 and 26. Accordingly, applicants respectfully submit that independent claims 1 and 26 and claims 3-7, 33, 38 and 41 that depend, directly or indirectly from claim 1 or 26, are allowable.

Claims 8, 10, 11, 27, 32, 34, 37, 39 and 42

Claims 8, 10, 11, 27, 32, 34, 37, 39 and 42 have been rejected under 35 U.S.C. § 103(a) as being obvious from Gorecki and Lu in view of WinSLAC. This rejection is respectfully traversed.

Applicants' invention, as defined by independent claims 8 and 27, is directed to receiver circuitry and methods for adaptively equalizing a data signal. The receiver circuitry and methods include, *inter alia*, programmable circuitry that is programmed with a first value indicating a first selection between integer spacing and fractional spacing of the taps. Processing circuitry that computes a second value indicating a first selection between integer spacing and fractional spacing of the taps. Selection circuitry that selects one of the first and second values. Equalization implementation circuitry that selects the tap spacing of a filter corresponding to the selected value.

The Examiner acknowledges that Gorecki fails to show or suggest selection circuitry that selects one of the first

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and second values based on a control signal and relies on
WinSLAC to make up for this deficiency (Office Action, page 9).

As discussed above with respect to claims 1 and 26,
applicants respectfully submit that WinSLAC does not show or
suggest selection circuitry that selects one of two values
based on a control signal. Thus, WinSLAC does not show or
suggest these features defined by applicants' claims 8 and 27.

Lu does not make up for the deficiencies of Gorecki
and WinSLAC relative to the rejection.

Therefore, Gorecki, WinSLAC and Lu, whether taken
alone or in combination, do not show or suggest all the
features of applicants' claims 8 and 27. Accordingly,
applicants respectfully submit that independent claims 8 and 27
and claims 10, 11, 27, 32, 34, 37, 39 and 42 that depend,
directly or indirectly from claim 8 or 27, are allowable.

Claims 21, 22, 30 and 36

Claims 21, 22, 30 and 36 have been rejected under
35 U.S.C. § 103(a) as being obvious from Jaynes in view of
WinSLAC. This rejection is respectfully traversed.

Applicants' invention, as defined by claims 22
and 30, is directed to receiver circuitry and a method for
adaptively equalizing a data signal. The receiver circuitry
and methods include, *inter alia*, programmable circuitry that is
programmed with a first training pattern and outputs the first
training pattern and a first control signal. Training pattern
circuitry that stores a second training pattern and outputs the
second training pattern in parallel with the first training
pattern. Selection circuitry that receives the first control

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signal and the first and second training patterns in parallel and selects one of the first and second training pattern based on the first control signal.

The Examiner acknowledges that Jaynes fails to show or suggest selection circuitry that receives the first and second training patterns in parallel and selects one of the first and second values based on a control signal and relies on WinSLAC to make up for this deficiency (Office Action, page 7).

First, as discussed above with respect to claims 1, 12, 26 and 28 WinSLAC does not show or suggest selection circuitry that selects one of two values based on a control signal. Thus, WinSLAC does not show or suggest these features defined by applicants' claims 22 and 30.

Second, as discussed during the interview, applicants respectfully submit that WinSLAC does not show or suggest selection circuitry that receives the control signal and the first and second values in parallel, as required by applicants' claims 22 and 30. In particular, in WinSLAC the user interface allows a user to specify whether the filter model will calculate coefficient values (i.e., the alleged first value) or use predetermined coefficient values (i.e., the alleged second value) by having the user provide calculate and set parameters, respectively. However, when the user specifies which method to use, coefficient values are not being generated and thus WinSLAC does not show or suggest selection circuitry that receives any values, let alone two values (e.g., a first training patter that is programmed and a second training pattern that is stored). Moreover, because the filter will

generate coefficients based only on the selected method (i.e., calculate or set), WinSLAC does not show or suggest coefficients generated from both methods at the same time to be received in parallel by selection circuitry, as required by applicants' claims.

Therefore, Jaynes and WinSLAC, whether taken alone or in combination, do not show or suggest all the features of applicants' claims 22 and 30. Accordingly, applicants respectfully submit that claims 22 and 30, and claims 21 and 36 that depend, directly or indirectly, from claim 22, are allowable.

Claims 24, 32 and 37

Claims 24, 32 and 37 were rejected under 35 U.S.C. § 103(a) as being obvious from Gorecki and Lu in view of WinSLAC. This rejection is respectfully traversed.

Applicants' invention, as defined by independent claims 24 and 32, is directed to receiver circuitry and methods for adaptively equalizing a data signal. The receiver circuitry and methods include, *inter alia*, programmable circuitry that is programmed with a first value corresponding to a first sampling point location and outputs the first value and a control signal. Processing circuitry that computes a second value corresponding to a second sampling point location and outputs the second starting value in parallel with the first starting value. Selection circuitry that receives the control signal and the first and second values in parallel and selects one of the first and second values based on the control signal.

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The Examiner acknowledges that Gorecki fails to show or suggest selection circuitry that selects one of the first and second values based on a control signal and relies on WinSLAC to make up for this deficiency (Office Action, page 9).

As discussed above with respect to claims 1, 8, 26 and 27 WinSLAC does not show or suggest selection circuitry that selects one of two values based on a control signal. Thus, WinSLAC does not show or suggest these features defined by applicants' claims 24, 32 and 37. Lu was cited by the Examiner as allegedly showing other features of applicants' claims and does not make up for the deficiencies of Gorecki and WinSLAC relative to the rejection.

Accordingly, applicants respectfully submit that claims 24, 32 and 37 which depends from claim 24 are allowable.

## Conclusion

For the reasons stated above, applicants respectfully submit that this application is in condition for allowance. Reconsideration and prompt allowance of this application are accordingly respectfully requested.

Respectfully submitted,

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